

# Social and Economic Impacts of Driving Cessation in the United States



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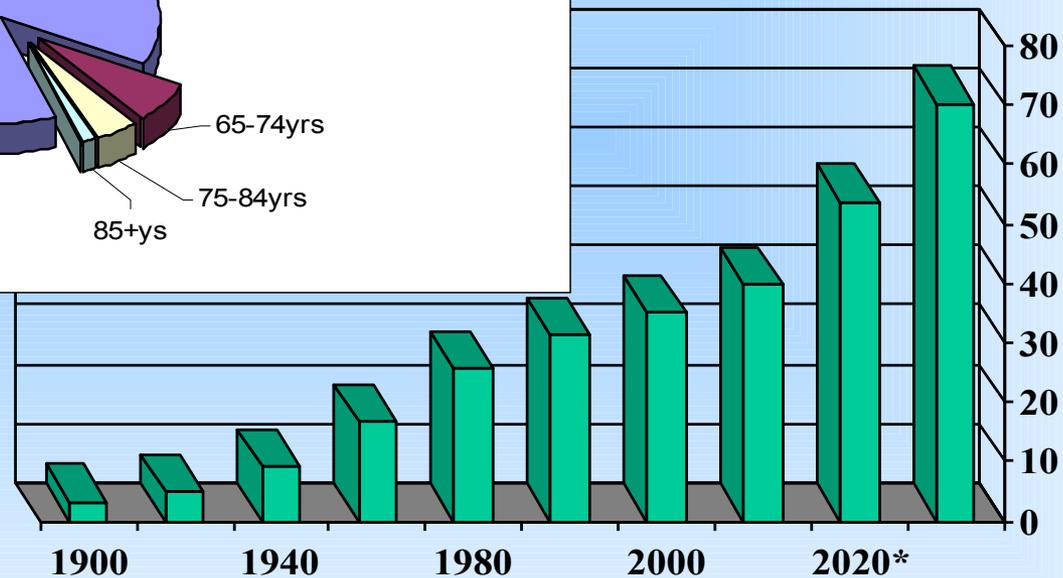
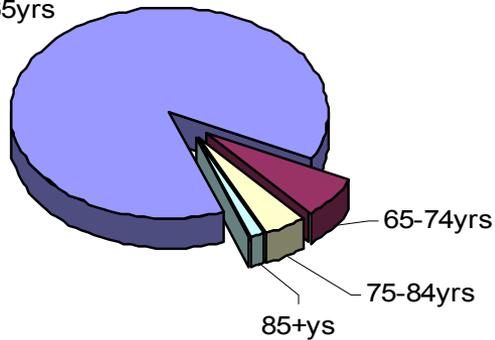
# Background

- Automobile travel is the primary source of out-of-the-home mobility in the US
- Driving cessation likely to curtail older Americans' mobility
- At the 1999 TRB meeting on transportation and aging, the impact of loss of mobility on health was identified as a Key Issue
- Need methodology to quantify
  - Contribution of mobility to health
  - Other costs of lost mobility

# In 2030 One Out of Five Americans Will Be 65 or Older (70 Million)

Age Distribution of the United States Population, 2000

US Pop < 65yrs



Number of Americans 65 and older (in millions) by year

**In 2000 there were 143 women for every 100 men age 65 and older, (21 million women vs. 14 million men)**

# Issue

- Research suggests
  - Lost out-of-the-home-mobility
    - Leads to isolation, depressive symptoms, illness
    - Diminished quality of life
- Relationship between driving status and sense of autonomy and health hypothesized
  - Insufficient data to validate

# What We Know

- The US population is aging
- Driving declines with age
- Major/minor depression
  - Widespread public health problems
- Risk of automotive injury and fatality increases with age



# Driving Cessation

- More likely due to self-perceived physical incapacitation than diagnosis
- Is episodic
- Decision to cease can depend on life requirements (e.g. employment)
- Men postpone cessation longer than women
  - Hu, Lu & Trumble DOT HS 1997

# **Driving Cessation: A Socially Induced Disability?**

- Disablement - gradual and nonlinear process of decline
- Decision to cease driving has consequences
  - For many areas of life
  - Embedded in life choices
- Driving cessation can be considered a disability
  - Broad range of effects if residence location doesn't offer transportation alternatives
    - Robin Barr, NIA

# What Does Driving Cessation Mean?

- If driving is ... [a] resource
  - ...It is possible to replace that resource with alternative forms of transportation
  - And the alternative services may also reduce the risk of a crash that injures or kills the affected older adult ... a net reduction in health risk
- If driving is itself part of independence
  - ...The loss represents part of a cascade towards increasing dependence and death
    - Robin Barr, NIA

# Cessation - “Sentinel Event”

- Driving reduction/cessation worsens depression
- Having a spouse or relative who drives often does not mitigate depression following driving cessation
- Driving cessation (not loss of mobility) is a key link to depressive symptoms
- Driving cessation suggests loss of control and dependency, affecting self-image

# Driving Cessation and Depressive Symptoms

- Driving cessation:
  - Restricts access to economic, social, and health care services
  - Reduces ability for self-care
- Brings on depressive symptoms:
  - Because is symbolic to identity



# Methodology- Background

We need to understand:

- Reasons for driving cessation
- The impact of residence on mobility
  - Location and living arrangements
- Available mobility options
  - Access to public transport, affordability of private transportation
- Different expectations among current and future cohorts

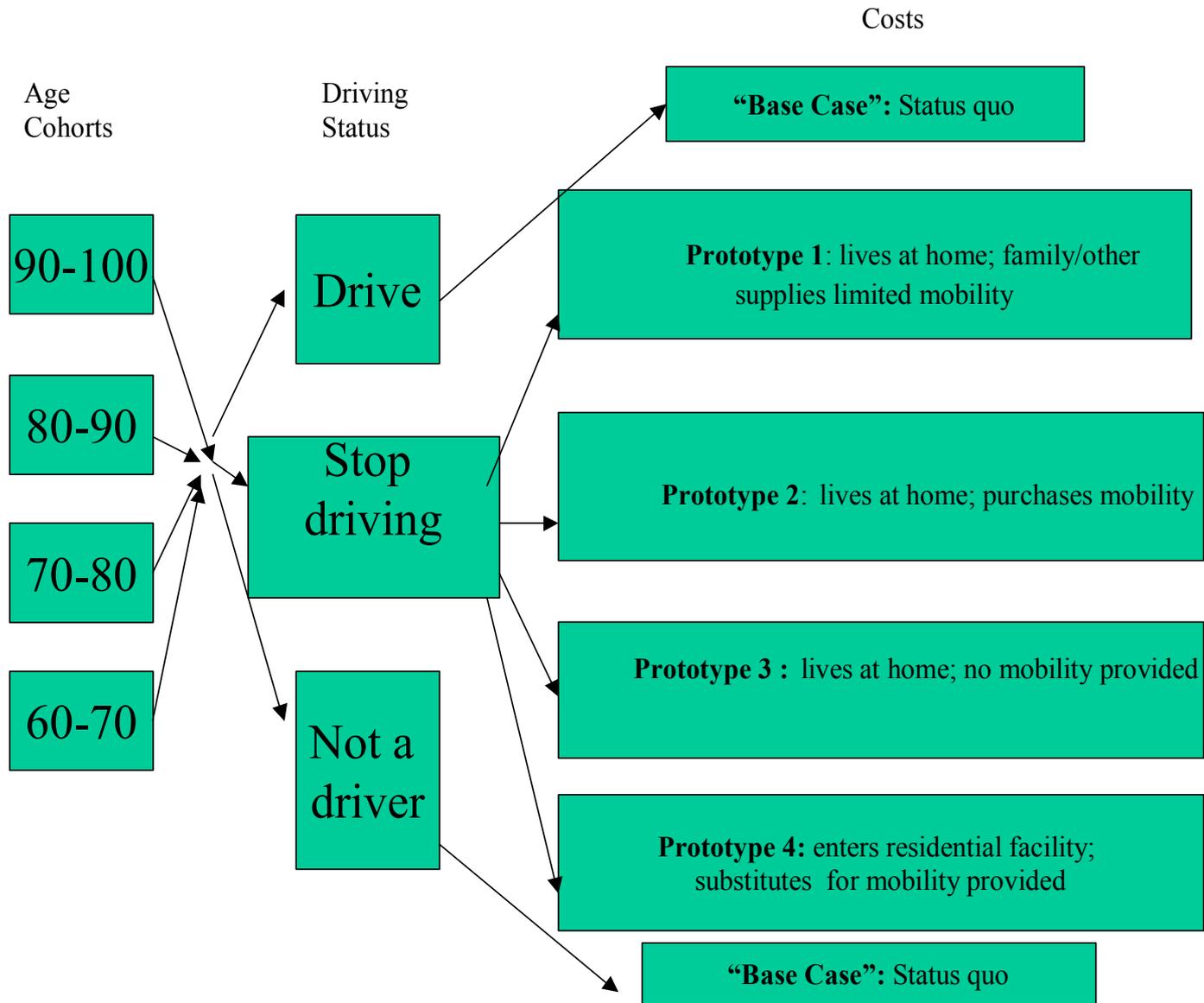
# **Five Step Methodology: Estimating Social and Economic Costs**

1. Define the temporal course of driving cessation
2. Identify substitutions for driving cessation (“prototypes”)
3. Estimate the magnitude of the population by prototype
4. Identify costs for each prototype
5. Acquire cost information

# Mobility and Its Substitutes

## Mobility prototypes

- “Base Case:” *Status quo*,” self-provided mobility
- Prototype 1: lives in residence, informal provision of mobility through friends and family
- Prototype 2: lives in residence, can afford to purchase mobility
- Prototype 3: lives in residence, limited ability to purchase mobility, lacks mobility substitutes
- Prototype 4: residential facility; mobility substitutes provided and services “brought in”



# Estimates of Population Age 65 and Older, by Mobility Prototype, by Help Required

	Base Case	1	2	3	4	
Residence	Private	Private	Private	Private	Assisted Living	Skilled Facility
Requires Transportation Help	No	Limited	Complete	Complete	Complete ??	N/A
Receives Transportation Help	No	Yes	Yes	No	Yes??	N/A
Percent	72	18	2	2.2	1.4	4.4

# Costs By Prototype

- Costs:
  - Direct or ‘out-of-pocket’ costs.
  - Opportunity costs, e.g., volunteer caregiver foregoes employment earnings for time spent in volunteer caregiving.
  - Indirect costs. Person loses mobility and experiences illness because of the loss of social interaction bestowed by external mobility.

# Allocating Loss of Mobility Costs

- Costs associated with mobility loss can fall on:
  - Individual
  - Family and friends
  - Private enterprises, e.g., social services and medical sector
  - Community
- Local government
- State
- Nation (social costs)
- Others

# Data Needs

- Data must provide:
  - driving and mobility status
  - health status
  - income and consumption expenditures
- Propose reanalysis of HRS/AHEAD
  - national sample
  - estimate distribution of functional capability and living arrangements

# HRS/AHEAD

- NIA - sponsor, conducted by University of Michigan
- National longitudinal sample; 1992, 1994, 1996, 1998, 2000, anticipate 3 more waves
- Measures: financial resources, retirement, health, ADLs, IADLs, cognitive information, physical ailments, income and consumption expenditures
- Records driving reduction, cessation, spouse driving

# HRS/AHEAD

- Demographically representative, national sample. By using HRS/AHEAD...
  - Estimates can be ‘ratcheted’ up to national population segments.
  - We can determine point estimate of costs as well as confidence interval (precision of estimate)

# Considerations

- Loss of mobility costs could be short or long run
  - Short-run cost occurs by paying a premium for goods/ services delivery
  - Long-run costs occurs if health declines due to loss of mobility
- Should costs be net of any benefits that might accrue from a person *not* having external mobility?
  - If driver is at a *very high* risk of a crash due to age-related deficits
- Are costs recoverable?
  - While costs are incurred from mobility loss, can public and/or private investment recover those costs